

Binarity in Debris Disks: The Kuiper Belt

Keith Noll

(Email: noll@stsci.edu)

Space Telescope Science Institute, Baltimore, Maryland

A surprisingly large fraction of objects in the Kuiper Belt are binaries. A homogeneous sample of 122 objects with the Hubble Space Telescope shows that $5 \pm 2\%$ of objects have binary companions separated by at least 0.15 arcsec and with brightness difference of less than 1 mag. Two smaller surveys using HST suggest this fraction may double when the magnitude difference is extended to approximately 2.5 mag. PSF-fitting of HST data suggests that the fraction of binaries may increase rapidly at smaller separations. Finally, the detection of a large amplitude lightcurve in one object suggests that up to 10% of trans-neptunian objects may be contact binaries (*Sheppard and Jewitt, 2004*). Taken together, it appears that binarity is common in the Kuiper Belt. The formation of binaries in debris disks may be an important and widespread phenomenon.

-
- [a] Sheppard, S.S., and Jewitt, D.C., Extreme Kuiper Belt Object 2001 QG298 and the Fraction of Contact Binaries, *AJ*, **127**, 3023–3033, 2004.

